injection preparations.

The Examiner pointed out that Petitou et al do not specifically provide a method for preventing clotting in an extracorporeal blood circuit. The Examiner concluded, however, that it would have been obvious to employ the sulfated glycosaminoglycanoid derivatives of heparin of Petitou et al., by injecting them into patients undergoing extracorporeal blood treatment, to prevent clotting in the extracorporeal device. The Examiner has stated that because of the teachings of Petitiou et al. that sulfated glycosaminoglycans have antithrombotic activity and can be administered by injection, one of ordinary skill in the art would have a reasonable expectation that the methods presently claimed would be successful, concluding that the invention would have been *prima facie* obvious.

Distinctions Between the Prior Art Petitou et al. and the present invention.

Rejection of claims 11-18 for obviousness over Petitou et al. is respectfully traversed, particularly in view of the present amendments. Petitiou et al. teach that the compounds of their invention may be administered for the treatment of venous thrombosis or for the inhibition of smooth muscle cell proliferation (col. 5, lines 1 and 2). This prior art disclosure relates to the activity of the compounds internally, within the patient. Preventing clotting in an extracorporeal blood circuit is a clinically different use.

Petitou et al. may teach the compound, but, as acknowledged by the Examiner, they make no suggestion that the compound may be used to prevent clotting in extracorporeal blood circuits. Nor could the ordinary practitioner reliably anticipate their successful extracorporeal use in view of the disclosure of Petitou et al. that such compounds can be used for treating venus thrombosis or for the inhibition of smooth muscle cell proliferation. These are thrombotic disorders. The present invention uses these compounds to avoid blood clotting in extracorporeal blood circuits for treating patients with kidney disorders and other diseases that are not thrombotic disorders.

The present invention addresses a different problem, extracorporeal clotting, from the therapeutic anti-thrombotic use suggested in the prior art. Being different clinically, such things as dosages could not be predicted. For example, Petitou et al teach a daily dose for the treatment of venous thrombosis. The present claims provide dosage ranges for each dialysis treatment, which would not take 24 hours and would not be a daily event. With the present amendments the claims recite particular dosage ranges "for each treatment".

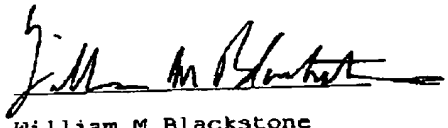
Conclusion

In view of the above, with the present amendments, it is believed that claims 11-18 recite a patentable improvement in the art. Favorable action is solicited.

If necessary, the Commissioner is hereby authorized in this,

concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2334 for any fees required. Should the Examiner consider that a conference would be helpful in advancing this application, she is invited to telephone Applicants' attorney at the number below.

Respectfully Submitted,



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Enclosure: VERSION WITH MARKINGS TO SHOW CHANGES MADE

Attorney Docket Number O 97277 US D1

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

The claims have been amended as follows:

11. (Twice) A method for preventing clotting in an extracorporeal blood circuit of a patient undergoing extracorporeal blood treatment comprising administering for each treatment [by injection] to the patient or to the circuit 0.001 to 10 mg of methyl O-(3,4-di-O-methyl-2,6-di-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(3-O-methyl-2-O-sulpho-ß-D-glucopyranosyl uronic acid)-(1→4)-O-(2,3,6-tri-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(3-O-methyl-2-O-sulpho-α-L-idopyranosyl uronic acid)-(1→4)-2,3,6-tri-O-sulpho-α-D-glucopyranoside or a salt thereof per kg body weight of the patient.

12. (Twice) A method for preventing clotting in an extracorporeal blood circuit of a patient undergoing extracorporeal blood treatment comprising administering for each treatment [by injection] to the patient or to the circuit 0.30 to 30 mg of methyl O-(3,4-di-O-methyl-2,6-di-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(3-O-methyl-2-O-sulpho-ß-D-glucopyranosyl uronic acid)-(1→4)-O-(2,3,6-tri-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(3-O-methyl-2-O-sulpho-α-L-idopyranosyl uronic acid)-(1→4)-2,3,6-tri-O-sulpho-α-D-glucopyranoside or a salt thereof.

15. (Twice) A method for preventing clotting in an extracorporeal blood circuit of a patient undergoing extracorporeal blood treatment comprising administering for each treatment [by injection] to the patient or to the circuit 0.001 to 10 mg of methyl O-(2,3,4-tri-O-methyl-6-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(2,3-di-O-methyl-ß-D-glucopyranosyl uronic acid)-(1→4)-O-(2,3,6-tri-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(2,3-di-O-methyl-α-L-idopyranosyl uronic acid)-(1→4)-2,3,6-tri-O-sulpho-α-D-glucopyranoside or a salt thereof per kg body weight of the patient.

16. (Twice) A method for preventing clotting in an extracorporeal blood circuit of a patient undergoing extracorporeal blood treatment comprising administering for each treatment [by injection] to the patient or to the circuit 0.30 to 30 mg of a methyl O-(2,3,4-tri-O-methyl-6-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(2,3-di-O-methyl-ß-D-glucopyranosyl uronic acid)-(1→4)-O-(2,3,6-tri-O-sulpho-α-D-glucopyranosyl)-(1→4)-O-(2,3-di-O-methyl-α-L-idopyranosyl uronic acid)-(1→4)-2,3,6-tri-O-sulpho-α-D-glucopyranoside or a salt thereof.